

Problem Analysis and Professional Training in Educational Psychology

An accountable model of practice

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Summary

'If we can really understand the problem, the answer will come out of it, because the answer is not separate from the problem' (Krishnamurti).

The importance of utilising systematic problem-solving approaches in educational psychology practice has long been recognised. Human problems are, by their nature, complex and problem-solving approaches need to be both conceptually sophisticated as well as practical. The problem analysis framework, discussed in this article, offers one way of understanding and managing the complexity of human problems which is grounded in a sound knowledge base in applied psychology. The problem analysis framework is outlined and possible implications (and opportunities) for educational psychology training and practice are highlighted.

Introduction

The challenge of adapting psychological theory and research to the demands of the everyday world is one which has taxed professional educational psychologists (EPs) over the years. Such a task not only demands considerable professional 'artistry', but also requires a sophisticated framework which allows practising EPs and their clients to move from a systematic examination of human problems to an enhanced understanding of the nature of such problems and finally to a carefully selected strategy for problem management.

Human problem solving is inevitably complex and, in the case of educational psychology, many of the problems on which pupils, parents and teachers seek advice are likely to be long-standing and overlaid by a history of well meaning, and/or half-hearted, attempts which may have achieved little more than a confirmation that change is too difficult to achieve. (For example, a teacher may have come to accept that there is nothing that the school can do to help a pupil with specific learning difficulties, or a parent may have become resigned to accepting a child's aggressive behaviour.)

In psychology, it has long been observed that most people almost never seem to approach a problem systematically or exhaustively, unless specifically educated to do so (Miller et al, 1960). The most frequently occurring example of *unsystematic* problem solving in action can be seen in that classic scenario where the person who has mentioned a problem or difficulty to a friend receives the inevitable reply: 'Have you tried ... ?'. Systematic problem solvers know from bitter experience that effective advice can only emerge after a surprisingly large number of steps in problem analysis have been jointly undertaken.

Problem solving in educational psychology practice

Pearson and Howarth (1982) viewed professional psychology as a problem-solving profession. The

personal and technical skills required in gathering information about a problem, and implementing and evaluating a solution, are similar in all branches of professional psychology and emphasize a need for initial training to provide psychologists with adaptive basic skills (including problem-solving skills) which can be used to respond to the demands of a rapidly changing living and learning environment.

When developing a core curriculum for EPs in training and specifying key competencies for practising EPs, the working group set up by the British Psychological Society (Division of Education and Child Psychology Standing Committee on Core Curriculum and Competencies) faced the question: 'What discriminates the work of EPs from that of other support professionals?'. The answer seems to be that EPs not only draw upon a knowledge base in psychological theory and research, but also employ a systematic approach to problem solving which enables them to understand and manage human problems from a holistic perspective. A number of EPs involved in initial training in Britain have written about the central place of problem solving as a core professional competency: Cameron and Stratford (1987), Frederickson et al (1991), Miller et al (1992) and Sigston (1992).

Cameron and Stratford (1987) offered an account which is comprehensive in terms of both the sequence of steps which make up their problem-centred approach and the range of levels of work to which it is intended to apply – individual assessment, consultation and other work with second order clients such as teachers, and work at an organisational level. Alternative problem-solving processes have been available for use in each of these contexts for many years. Herbert (1981) focused on individual assessment applications, Gutkin and Curtis (1982) offered a problem-solving model of school-based consultation, while Schmuck et al (1972) outlined a seven-stage problem-solving procedure for addressing organisational problems in schools.

Possible limitations

Two possible limitations will be considered here: those relating to the *context-approach* fit and those relating to the *user-approach* fit. In discussing context-approach fit, we will consider whether different problem-solving approaches are needed for different types of problems and in different contexts. As far as the user-approach fit is concerned, the extent to which the skills, experience and theoretical orientation of the EP using a particular problem-

solving approach may interact with the process will be discussed. The section will conclude by arguing that a new model of problem solving is needed to overcome the limitations identified.

The issue of *context-approach fit* in the application of problem-solving approaches has received consideration by a number of authors and not just in relation to educational psychology. Schön (1983) and, more recently, Robinson (1993) critique the 'technical rationality' view of professional activity which: 'consists in instrumental problem solving made rigorous by the application of scientific theory and technique'. While acknowledging the existence of 'high, hard ground where practitioners can make effective use of research-based theory and technique' they argued that practitioners may more often find themselves in a swamp where many of the problems of greatest human concern exist as: 'confusing "messes" incapable of technical solution' (Schön, p 42).

Likewise, Checkland (1984), in describing the development of soft systems methodology (SSM), calls into question:

'the main thrust of that considerable literature on "problem solving" which is predicated on the proposition that problems may, and should be, defined as a search for an efficient means to achieve a defined objective ... [because of] ... the impossibility of defining objectives once and for all and the conflict endemic in different actors' definitions is characteristic of unstructured real world problems' (p 99).

Whereas Schön (1983) maintains that real world professional problem solving should be seen essentially as a 'craft', not open to analysis but involving reflection in action, Checkland and Scholes (1990) argue that professional problem solving can be analysed and translated into methodology which embodies reflection in action. While calling into question the general applicability of scientific problem-solving approaches to 'soft' social science problems, they nevertheless advocate the use of approaches which: 'introduce some of the kind of rigour normal in natural science into this more difficult field of applied social science' (p 290).

Where does this fit with the context of educational psychology practice? In discussing the application both of SSM and of Cameron and Stratford's 'problem-centred approach' to the practice of EPs, Frederickson (1990) argues that in EP practice unidimensional human problems (about which there is consensus) are rare. While it may be possible to identify a well

defined area of concern about which there is general agreement and utilise a problem-centred approach to tackle and resolve this problem, most situations encountered by EPs seem closer to the SSM interactive description of 'real world messes' or 'systems of interlinked problems', which will be perceived and defined in different ways by different protagonists. Similarly, from their experience of educational psychology training, Miller et al (1992) report a dawning realisation concerning the inadequacy of classic problem-solving models: 'for dealing with the complex interpersonal perceptions, motives and behaviour that are encountered in work in a professional context' (p 31). They argue that attention must also be given to the interpersonal and systemic aspects of problem solving in a professional context.

Issues concerning *user-approach* fit have been given comparatively little attention in the literature. The prevailing assumption appears to be that training EPs in problem-solving approaches should proceed by teaching a set of well researched principles, selected to maximise the probability of high-quality solutions being generated. Indeed D'Zurilla and Goldfried (1971) drew attention to the fact that there was a remarkable degree of agreement as to the general kinds of operations involved in effective problem solving, although the precise terminology and the steps involved in the problem-solving process vary between authors. It can be seen from Figure 1 that this generalisation largely holds for subsequently developed models, whose steps can be seen to represent elaboration of these long-standing basic stages, rather than radical revision of them.

Even if those being trained attempt faithfully to apply the problem-solving approach they are taught, it is likely, as Sigston (1992) points out, that differences will be apparent between what Argyris (1976) refers to as their 'espoused theories' and the 'theories in use' apparent from their actual professional practice. de Mesquita (1992) reports that practising school psychologists do not always adhere to the systematic assessment approaches which they claim to be applying. In his study, experienced practitioners did not differ from trainee school psychologists in their problem solutions or strategies. The only difference found was in the relative 'efficiency' of the experienced practitioners who spent less time on information processing and problem solving.

Miller et al (1992) further observe, 'problem solving is not a mechanical operation and the potential problem solver brings to the situation, and must be aware of, his or her own personal assumptions,

values and prejudices' (p 37). When the problem solvers are professional psychologists they will also bring to the situation different psychological theory and research. Reynolds et al (1984) describe a vision of school psychologists as 'problem solvers whose actions emanate from meaningful psychological theories and relevant empirical data' and (like Sigston, 1992) commend problem solving as a process within which different theories and content can be accommodated.

The practice of problem solving cannot be content- or value-free. In carrying out a step such as 'collect data relevant to the problem' (Cameron and Stratford, 1987), the theoretical bases which inform the psychologist's work are also likely to influence the type of data which they choose to collect. The use of behavioural frameworks would lead to the collection of information on antecedents and consequences, while cognitive approaches would place more emphasis upon the sense which a child is making of the behaviour being exhibited. Theoretical considerations will also influence whether one problem is identified as the priority problem (and if so, which one), the relative weight given to collecting data on the presenting problem itself (as opposed to factors which may be influencing its occurrence), the nature of the alternative interventions considered and the data regarded as relevant in selecting between them and in the later evaluation of effectiveness.

Fredrickson et al (1991) have argued that EPs have paid insufficient attention to the theoretical bases which have informed problem-solving practice. This may be due to an implicit over-reliance on behaviourally based approaches to problem solving (Sigston, 1992). Frederickson et al emphasize the need to focus on 'why' questions in formulating hypotheses about the nature of the difficulties being experienced and put forward the view that the unique contribution of the EP lies in the very broad range of hypotheses which they are able to generate in helping those concerned about a child develop a useful understanding of the situation. These authors express concern that EPs tend to consider too narrow a range of possible hypotheses.

The validity of this concern is supported by a study of the application of problem solving in the practice of American school psychologists (de Mesquita, 1992). He reports that most psychologists use a solution by elimination ('rule out') strategy. This involves testing out the small number of hypotheses which they perceive to be most probable and eliminating any when disconfirming evidence is

Figure 1. Problem solving

Operations involved in effective problem solving

- a) General orientation.
- b) Problems definition and formulation
- c) Generation of alternatives.
- d) Decision making.
- e) Verification.

Source: D'Zurilla and Goldfield (1971)

A problem-centred approach to the delivery of applied psychological services

- 1. a) List assests
- b) List problems, complaints, difficulties.
- 2. Select a priority problem.
- 3. Specify the priority problem operationally.
- 4. Collect data relevant to the problem.
- 5. Identify probable factors contributing to the problem.
- 6. Specify a desired outcome.
- 7. Plan possible interventions. Select the best alternative.
- 8. Implement intervention plan.
- 9. Record and monitor the effects of the agreed intervention.
- 10. If outcome is successful – select the next priority from list item 1 or agree that no further intervention is necessary. If outcome is unsuccessful, repeat steps 4–9.

Source: Cameron and Stratford (1987)

A basic sequence for problem solving

- 1. Identifying the problem.
- 2. Analysing the problem.
- 3. Generating multiple solutions.
- 4. Designing plans for action.
- 5. Forecasting consequences of intended actions.
- 6. Taking action.
- 7. Evaluating the actions.

A procedure for helping a team of educators to solve organisational problems in schools.

Source: Schmuck et al (1972)

Problem solving sequence

- 1. Define and clarify the problem.
- 2. Analyse the forces impinging on the problem.
- 3. Brainstorm alternative strategies.
- 4. Evaluate and choose among alternatives.
- 5. Specify consultee and consultant responsibilities.
- 6. Implement the chosen strategy.
- 7. Evaluate the effectiveness of the action and recycle if necessary.

A problem solving model of school based consultation.

Source: Gutkin and Curtis (1982)

Teaching children interpersonal problem-solving skills

- 1. Problem-solving orientation.
- 2. Problem identification and goal setting.
- 3. Generation of alternative solutions.
- 4. Consideration of consequence and decision making.
- 5. Making plans and checking for sussess.
- 6. Integration of problem-solving behavior.

Source: Thacker (1982)

found. Accountable practice requires more than this. It requires a comprehensive consideration of the problems on which advice is sought and the provision of an explicit data-based rationale for decisions made and actions taken. If the models of problem solving which have been used to date cannot deliver these, perhaps a new model is needed for EP practice in the new millennium.

Using an explicit framework for human problem solving confers important advantages on practitioner and client alike. Such a framework not only helps everyone concerned to see the goodness of fit between the process and outcome of problem management, but also provides a medium for inducting new EPs into the complex activities demanded of the profession in everyday work and enables experienced practitioners to share and develop good practice.

What are some of the requirements for a practical and effective model of problem solving which can enable an EP to make a unique contribution in a range of settings, with a variety of clients and a barrage of unpredictable and idiosyncratic problems?

1. Such a model would need to recognise the *complexity of problems* expressed by pupils, parents, teachers and others.
2. The model would have to be able to offer *acceptable and novel insights* into what is causing or maintaining the problem.
3. A clear *rationale* would need to be demonstrated between problem explanation and agreed action.
4. The approach would have to be robust enough to achieve all these requirements and still meet the criterion of *psychological rigour* (be open to scrutiny, verifiable, generally applicable).

In the following sections of this article, we describe a model which we believe can overcome some of the limitations of traditional problem-solving frameworks.

The problem analysis framework

This section of the article outlines the problem analysis framework and describes how we use this to inform and structure our practice and to provide a basis for teaching on the MSc professional training programme in educational psychology at University College London. By making the model explicit, we hope that colleagues will see the potential value of opening up their practice to informed enquiry, as well as enabling practitioners and clients to share a more thoughtful and meaningful dialogue.

What is problem analysis?

Problem analysis is a process by which information is structured and analysed in a way which facilitates its understanding by both client and EP. The problem situations referred to EPs can appear overwhelming to both the practitioner and client. It is not surprising then that some EPs may lose sight of the problem situation as a whole in an attempt to 'contain the situation' by focusing too early on what seems to be the most relevant aspect of the request, the 'priority problem' (Robinson, 1987).

On the other hand, order does need to be established from the mass of information received before a clear path of action can be planned. We believe that the role of the EP is not to provide clients with confirmation of the confused nature of their problem(s) or merely provide a list of test results and a disconnected smorgasbord of intervention suggestions, reflecting either the current 'bandwagon' intervention or the EP's own bias (or both). Instead, it is the EP's task to reduce the complexity of the case and report back in such a way that is helpful to those they have been invited to assist.

One way to manage this complexity is for the EP to develop a model which transforms the details of the case into some form of 'problem map'. Such a map could outline the problem's key dimensions and their possible interconnections (Glaser, 1984). The model demands that the selection of an appropriate intervention is thus based upon analysis and research rather than upon untested assumptions, expediency or recourse to 'clinical judgement'.

In our adaptation and reformulation of the problem analysis framework used at UCL, we have drawn upon the work of Robinson (1987; 1993), Argyris (1976; 1993), Argyris and Schön (1974), Gill and Monsen (1996), and Westera and Burlton-Bennet (1995, personal communication). Our observations during work with EPs in training mirrored Robinson's (1987) findings in New Zealand in suggesting that they had difficulty in thinking about problem situations in ways which helped them provide clear and plausible rationales for the decisions they had made about assessment and intervention. EPs in training appeared to be confused about how to present succinctly their thinking about the decisions they had made in case or systems work. Typically, what we found was that their reports provided great detail about the actions they had undertaken, the assessments they had used and the results they had obtained. However, as readers we were left to fill in the gaps and to infer the underlying

rationales for the steps and decisions they had taken. As noted by Robinson (1987) the reader also had to provide the conceptual link which connected the 'results' and 'intervention' sections of a report.

The problem analysis framework requires that the EP's reasoning about a problem situation, the database upon which their hypotheses have been developed and the rationale for recommended actions are all made explicit. The EP's thinking and actions can therefore be supported or challenged (for example, a review of the case evidence by a colleague may either validate a colleague's practice or reveal a more plausible integrating hypothesis). This emphasis on the provision of an open and accountable framework to guide professional actions is in contrast to professional practice models which encourage the EP to become an 'expert advice dispenser' whose decisions are justified on the basis of positional power or 'clinical judgement', which by its nature is hidden and therefore not open to testing. As well as becoming increasingly untenable in what is becoming a more accountable and litigious working environment, the 'clinician model' also does little to address the learning needs of EPs in training.

The problem analysis framework demands that the EP does more than record actions taken and the data obtained: information is organised into a logical framework which will guide practice and intervention planning. Of central importance is the generation of hypotheses based on psychological theory and research about the nature and causes of the problem situation. Such hypotheses will guide discussions about which areas warrant exploration (ie, seeking, supporting and disconfirming information). Often EPs in training report that if they had had more time to assess they would 'really know what the problem was' ... and therefore the solution would be obvious. In this sense, they were seeking a holy grail – an objective single formulation of the problem to avoid feeling overwhelmed by the detail that the case generated.

Research from the fields of information processing and problem solving indicates that EPs can become overloaded with case detail and thus unable to detect patterns or connections (Robinson, 1987). We would also argue that, in practice, the EP's decisions in complex cases do not occur through some detached and neutral analysis, but reflect an active process whereby a problem is sampled in a systematic and logical manner guided by initial hypotheses. Rather than a search for 'the right' single conceptualisation of a problem, EPs seek a plausible and logical representation of a problem which has a higher

probability than others of providing a 'best-fit', encapsulating 'the facts of the case' and leading to a clear intervention plan.

Problem analysis steps and issues to consider

The following section illustrates how an EP's practice can be guided by using a problem analysis framework to structure case information and at the same time publicly test its appropriateness. The problem analysis framework used at UCL consists of a nine-step process which is depicted in Figure 2. Each step is now described and, where relevant, illustrated with examples.

Step 1: clarify the request and check out the need for EP's involvement

At this stage, there is a need to clarify with the client what the issues are and why they are consulting an EP. It is important to check whether a referral to (or the involvement of) another agency may be more appropriate given the nature of the initial concerns.

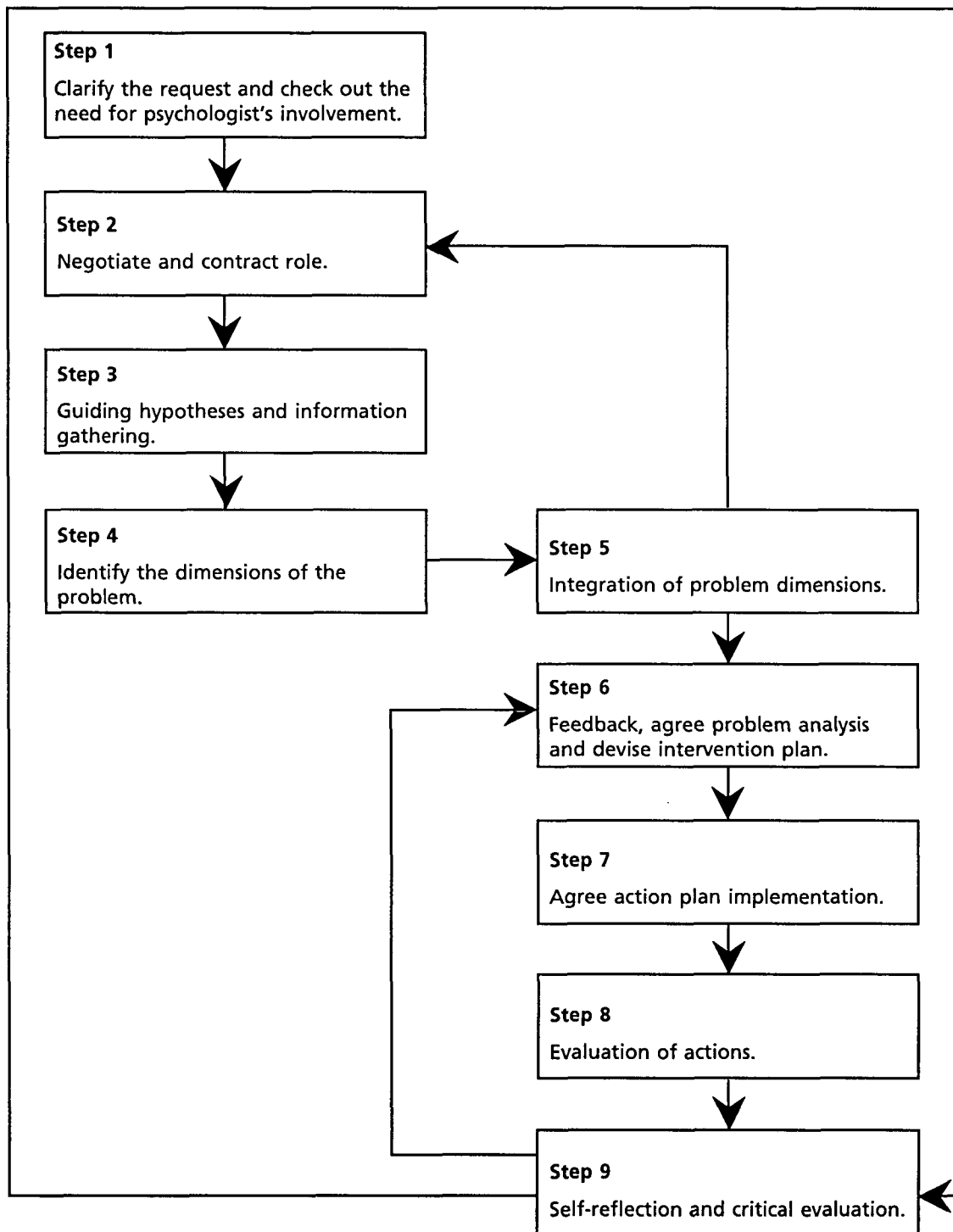
The following examples give a flavour of the requests which EPs may receive:

1. A primary school requests an assessment for a 'girl with general learning difficulties' who is also experiencing behavioural problems. The school wants 15 hours classroom assistant time paid for by the local education authority.
2. A secondary school requests a comprehensive academic assessment (including an IQ test) without supplying any data or rationale for why this information would be useful in clarifying the pupil's behaviour difficulties.
3. Parents request, via the special needs coordinator (SENCO), an IQ test for their 6-year-old child whom they perceive as being gifted, but who can not yet read her 7-year-old sister's books.

Issues to consider at Step 1

- Is the request or referral ethical?
- Is it an appropriate request for an EP or would it be more appropriate for another professional to be involved?
- Is someone requesting a course of action before there has been an opportunity to fully analyse the problem?
- Is there sufficient information disclosed with the initial request to allow the above questions to be addressed?

Figure 2. Problem analysis process



Step 2: negotiate and contract role

If a psychological perspective is warranted, then the EP negotiates a clear brief and purpose with the problem owner. This would include: outlining the aspects of the problem upon which they will be initially focusing, explaining rationales, describing what the assessment process will involve (including how effectiveness will be evaluated), and considering how the problem owner will be included and how 'reporting back' will be carried out.

The request is negotiated fully with the problem owner who, in most situations, will be the person(s) with a vested interest in solving the problem (eg, a class teacher or a year tutor). A common mistake at this stage is to negotiate a brief solely with a person who is strategically distant from the problem situation (eg, headteacher, departmental head or SENCO). After discussions with the problem owner, the request is either accepted in the same (or modified) form, or referred back. Once accepted, this then becomes the joint working brief.

Let us look at how the requests outlined above were dealt with in practice and the role for the EP which was negotiated:

1. *A primary school's requests for an assessment of a 'general learning delayed pupil':* The EP agreed to collect data and analyse the pupil's difficulties. The assessment included an analysis of ecological and systems factors. The information obtained was then fed back to the school. Issues of funding for provision were not seen as being the role of the EP in this context, but rather a matter for discussion between the headteacher and the area education office, once the child's needs and the programme required to address them had been specified and agreed. The EP's role was to assist the school in clarifying the nature and extent of the problem situation. The information obtained by the EP was used, along with other school-based data, to re-evaluate the appropriateness of the school's current intervention.
2. *A secondary school's requests for a comprehensive academic assessment (including an IQ test):* The EP's negotiations with the school left the teacher collecting some baseline data. They would later meet to review this and renegotiate a possible role for the EP.
3. *Parents' request, via the SENCO, for a test of 'giftedness':* The EP agreed to meet with the parents and assist them in clarifying their concerns and looking at possible next steps.

Issues to consider at Step 2

- Is there a clear contract between the EP and the problem owner?
- Is the problem owner clear about the EP's role and the rationale they have given, especially if the EP is referring their request back to them? Problems arise when the problem owner perceives that they are 'missing out' on advice or assessment, with the EP appearing to be unreceptive to their needs. Such role confusions need to be addressed if the EP is going to continue a working relationship with the school. Experience shows that in some schools this can take some time.

Step 3: guiding hypotheses and information collection

On the basis of the information so far collected and drawing widely on a knowledge base of psychological theory, research and practice, the EP generates tentative hypotheses which will help guide initial data collection.

Psychologists in the field (and particularly EPs in training) are often told, because of time limitations, to limit their attention to the most relevant aspects of the request or referral. 'But, talk of relevance at this early stage is unhelpful, because this advice presupposes that the psychologist already knows the nature of the problem' (Robinson, 1987, p 35). Most of the problems that EPs encounter involve uncertainty about what counts as an analysis or solution. Problems which are characterised by a lack of obvious solution or by many paths to such solutions and by uncertainty about what is, and is not, relevant are termed 'ill-structured problems' (Simon, 1973). It is at this stage that the psychologist in 'Columbo' mode (after the American TV detective with a distinctive questioning style) 'throws the net wide' to sample as much of the problem situation as possible. However, the EP needs to guard against 'being dragged out of the boat': getting lost in case detail by throwing the net so far as to lose sight of the initial brief and purpose.

The purpose of 'casting the net' as widely as possible is to build a rich and complex map of the problem situation which identifies *all* of its key dimensions. This process is guided by the tentative guiding hypotheses which have been formulated and which focus the EP's attention on to particular aspects of the situation. Such guiding hypotheses are based upon information derived from the initial consultation and must be grounded in logic and/or sound theory.

The EP collects objective information which supports or disconfirms their initial guiding hypotheses. The initial hypotheses developed will obviously guide the sampling of certain areas and will, in turn, highlight other areas needing investigation. Assessment data relevant to the hypotheses being investigated may be collected from a wide range of sources. The EP may observe situation(s) where the problem is occurring using both structured and unstructured observational schedules. Other rich data sources could lead the EP to:

- examine environmental, classroom organisation and management factors, such as seating, grouping, instructions, difficulty level of work, adult-child and child-child relationships;
- consult records and files;
- collect and examine work samples;
- seek information from staff through interview, checklists or questionnaires about their involvement in and perceptions of the problem situation;
- examine school-based assessments and supplement these if necessary with criterion-referenced assessments;
- support staff in carrying out detailed curriculum-based assessment;
- administer normative tests of attainment and cognitive processing;
- communicate with the child concerned, obtaining information through informal, structured or standardised techniques about their attitudes, beliefs, values, learning style and approach to learning (Beaver, 1996);
- interview parents or carers to gain their perspectives and so on.

The prime focus of the framework is to help clarify problem situations so that effective interventions can be planned and implemented. 'Strengths and positives' are sampled if these would enhance our understanding of the problem situation, ie, support or disconfirm particular hypotheses. (As an example, Brian, a 15-year-old boy, over-reacts with all his subject teachers. A search for disconfirmation of the hypothesis that his behaviour is specific to school or attributable to teacher reaction provides the rationale for seeking information on whether Brian's behaviour out of school is 'positive' as well as the more obvious investigation of the antecedents and consequents of his over-reacting behaviour in school. If Brian's over-reacting behaviour occurs in many settings, a causal integrating hypothesis that relies solely upon teacher reactions would seem an insufficient explanation.)

Issues to consider at Step 3

- What are the guiding initial hypotheses and models?
- What are the possible hypotheses and dimensions which are relevant to exploring and identifying intervention needs?
- Are there reasons for focusing on 'strengths and positives'?
- Are measures used relevant, reliable and valid? Are there sound reasons for their use?
- Are a range of measures being used and cross-checked (ie, triangulation)?
- Is the EP drawing on the most relevant experience and research which can illuminate the problem analysis?

Step 4: identify the dimensions of the problem

On the basis of their assessment in Step 3, the EP identifies the various dimensions of the problem situation. Supporting data for each conceptual dimension are provided to show why this dimension is problematic. It is important to note that dimensions are presented in terms of behaviours (eg, reading performance) or relevant constructs (eg, self-perception) not by assessment devices used (eg, Neale Analysis of Reading Ability) or by unintegrated data (eg, child's views or parent's views). Table 1 gives an example of the problem dimensions which were supported by assessment data within a case referred to the EP for 'literacy and behaviour difficulties' (Westera and Burlton-Bennet, 1995, personal communication).

Table 1. Problem dimensions supported by assessment data

<i>Problem dimensions</i>	<i>Supporting data</i>
1. Erratic attendance	Attendance records
2. Reading delay	Running record analysis, school records, Neale Analysis of Reading Ability, British Ability Scale – Word Reading Subtest
3. Lack of confidence	Child/teacher and parent reports
4. Limited parental involvement	Parent/child reports
5. Inappropriate classroom behaviour	Observation/teacher report/peer validation

Issues to Consider at Step 4

- Are all the problem dimensions presented? For example, should the appropriateness of reading materials or teacher instruction and the child's self-acceptance be investigated?
- Are supportive data presented for all problem dimensions?
- Were the assessment devices used valid, reliable, culturally sensitive and relevant to clarifying the dimension reported?
- Do the data provide support the stated problem dimension?

Step 5: integration of problem dimensions

- *Integrating hypotheses:* The goal at this stage is to process the information sampled in a way which suggests causal relationships between the problem dimensions identified. The hypothesis chosen must be based on logic and/or sound research and must help make sense of the information collected and lead to a sound rationale for intervention recommendations and actions. For example, in the literacy-behaviour case outlined above, the reasoning went like this: minimal parental involvement *resulted in* erratic school attendance *which led to* lack of reading achievement *which led to* lack of confidence *which resulted in* behaviour problems. Issues to consider are: a) is the final hypothesis consistent with the data disclosed? (in other words, has the EP made good use of the information collected when thinking about the case?); b) is there an alternative hypothesis which is consistent with the data? (for example, in the case used above another explanation might have been: inappropriate instructional materials *resulted in* inappropriate behaviour *and therefore* lack of reading achievement.
- *Statement of priorities with rationale:* The EP may give reasons for the selection of one or more of the dimensions as being a priority for intervention rather than targeting all the dimensions. Dimensions may be selected as priorities because they are hypothesised as contributing to the others or it is predicted that by focusing on selected dimension(s), changes in the perceptions of the other problem areas are likely, or they require immediate intervention (eg, child abuse, teacher or child mental health issues), or they are the only accessible dimensions (eg, child's reading behaviour at school).

Issues to consider at Step 5

- Have priority dimensions been selected or have all problems been targeted for intervention?
- Is the rationale for priority selection sound or expedient? For example, if the pupil is being provided with inappropriate reading materials/instruction, then improving attendance at school is unlikely to alter reading achievement. This is where the skill of the EP in being clear about priority selection is needed. It is often tempting to focus on within-child problem dimensions, rather than acknowledge and attempt to improve more systemically based concerns. Unfortunately, this can result in a lot of effort on the part of the EP while very little may have actually altered in the child's living or learning environment.

Step 6: feed back and agree problem analysis and devise intervention plan

Based upon the integrating hypothesis and knowledge of relevant research, an intervention is devised in consultation with the problem owner(s). The rationale for the intervention is always made explicit. For example the EP may be able to say: 'Research by Harris in 1979 indicates that when children are given instructional material which they can read with a 95 per cent accuracy level, they make better reading progress and produce less inappropriate behaviour'. In this case, it was decided the EP should offer advice to the classroom teacher to match teaching materials for the pupil to this level.

Issues to consider at Step 6

- Is the intervention consistent with the causal integrating hypothesis and priority problem dimension(s) selected?
- Is the planned intervention ethical, developmentally appropriate and culturally sensitive?
- Do the people involved, including the EP, have the skills to implement the intervention?
- Is the intervention based upon sound logic and/or research, or does it reflect faddism?
- Are all parties agreeable to the intervention? Have teacher beliefs and constructs been explored prior to discussion of the intervention and any dissonance openly addressed and resolved? For example, the suggestions outlined above are unlikely to be uncritically accepted by a teacher (or parent) who is committed to the belief that a child will only 'catch up' if pushed by being given 'difficult' work.
- Is the intervention practical?

Step 7: agree action plan

Once agreement has been reached on the nature of the problem situation and the intervention plan to be adopted, then the EP and problem owner jointly produce an action plan. It is important in any action plan (this may take the form of an Individual Education Plan or Care Plan) to record *what* is to be done, *who* will carry out tasks, *when* these are to occur, and *how* processes and outcomes are to be monitored and evaluated, recording this in a sequence. An action checklist would therefore include the following components:

1. Specific outcomes (what is it staff want to achieve, under what conditions and when will it happen?).
2. Criteria for success (how will staff know when they have achieved what they set out to?).
3. Specific intervention steps (how do staff intend to guide the learning and reinforce that learning, including adaptations to the environment, and how will staff manage resources for most effective action, dealing with possible obstacles, eg, child absence, distractions and staffing issues?).
4. Monitoring and evaluation considerations for both process and outcomes.

Issues to consider at Step 7

- Have steps been taken to ensure that the plan is implemented adequately?
- Are the individuals involved committed to action?
- Do checks exist to ensure that agreed action is carried out?
- Is it clear how this particular intervention is going to improve the problem situation?
- Are systems in place to monitor progress and implementation?
- Have plans for ensuring maintenance and generalisation been drawn up?

Step 8: evaluation of outcomes

This step involves a joint evaluation with all those who had been involved in trying to solve the problem situation. The participants evaluate the status of the problem following their efforts (this may involve further assessment such as a post-intervention reading test to allow pre-/post-intervention comparisons). The participants consider further actions that may be needed (eg, regular reviews of progress), maintenance procedures to ensure that the

problem situation does not recur and what has been learnt that will be relevant to other similar problems in the future. It is important in outcome evaluation to obtain the views of all concerned with the problem situation, including the child, parents/carers and other staff.

The results of the intervention are presented according to the original problem dimensions and the intervention is judged as successful, partially successful or unsuccessful, and action is taken accordingly.

Issues to consider at Step 8

- Are the data sufficient to allow judgements about success to be made, eg, number of observations taken?
- Do the data show a consistent pattern or are there inconsistencies which point to changes which should be made to make the intervention more successful?
- Were problems encountered in implementing the intervention which indicate a need to revise the problem analysis?
- Did the intervention increase or decrease others' dependence on the professional, eg, did it skill or de-skill others?
- What was learnt from the case, and what are the implications for future work?

Step 9. self-reflection and critical evaluation

Although, in this article this step is presented as occurring at the end of the process, in reality evaluation happens throughout, since the EP is encouraged to critically consider their personal and professional effectiveness at each step in the problem analysis sequence. The task is to identify factors which supported and constrained effective functioning (eg, 'with hindsight, the lack of commitment by the class teacher at Step 7 appears to have resulted from a lack of listening on my part at Step 2 and thus we ended up negotiating a brief which was vague and did not address the concerns of the class teacher as problem owner', or 'by being unclear at Step 2 about the rationale for classroom observation, the teacher became angry at Step 6 as she had thought I was merely going to observe the child and not her interaction with the child').

EPs should have regular opportunities for supported reflection on their practice (Lunt and Pomerantz, 1993). This may occur through supervision sessions where their work issues are opened up for scrutiny by a 'critical friend'.

Anecdotal evidence suggests such sessions, if unstructured, can easily result in a long monologue where the 'critical friend' is overwhelmed by case detail and confused as to their role. It is not surprising then that they end up either positively reframing difficulties or giving off-the-cuff advice. Although the supervisee may 'feel better', their actual practice may have been left unchallenged and thus any opportunity to engage in the double-loop learning required to alter their professional practice has been lost (Argyris, 1993).

The problem analysis framework provides a useful way of structuring supervision sessions. Clearly, to be effective and purposeful, supervision requires a skilful interchange between supervisor and supervisee. Within the UCL Placement Supervisor Training Programme, we are currently developing ways of making such an interchange more effective by adapting Robinson's (1993) 'critical dialogue' framework to peer-supervision sessions, and supervisor-EP in training-supervision sessions (Gill and Monsen, 1996). Such sessions should provide an opportunity to debrief and evaluate not only the efficacy of the intervention but also the EP's own performance (via the nine problem analysis steps) and the quality of their analysis.

Finally, most complex problem situations are rich enough to provide support for everything but the most outrageous of analyses. Some have even termed the integration section of problem analysis framework (Step 5) 'the myths and legends section'. There are, nonetheless, important practical and theoretical questions which can be raised about the quality of EPs' analyses of their clients' problems. In addition to a format of process steps, an accountable model of problem analysis therefore requires some evaluation of the quality of that analysis. Table 2, which has been adapted from one first devised by Robinson and Halliday (1988), presents several criteria which have been used to discriminate degrees of quality under conditions where there is no exclusively correct statement of the problem.

Assets and areas for development

The problem analysis framework as described in this article facilitates communication between all those involved with the case, provides checks that there is a coherent rationale for all EP action, outlines a clear basis for contracting the services to be delivered by the EP and provides the means of considering the extent to which the contract has been fulfilled. The evaluation embedded within the problem analysis

model represents a further advance over existing problem-solving approaches. Criteria, against which the quality of the problem analysis can be judged, are available. These encourage critical self-reflection and support development of practice through helping EPs evaluate their contribution in achieving improved outcomes for children in partnership with others.

The problem analysis approach therefore offers a framework for both collegiate support and accountability in educational psychology practice. It provides a clearly defined process within which a wide range of practice can be accommodated and described using a common language. It requires that the evidential base of all conclusions and the rationale for all decisions are made explicit. These aspects will greatly facilitate the ability of colleagues to support and challenge each other. Where there is disagreement between EPs, the framework will also enable substantive issues to be quickly identified and should encourage a mode of resolution which focuses upon relevant evidence rather than unsubstantiated assertions masquerading as 'professional opinion' or 'clinical judgment'. Such professional sophistication should enhance the credibility of the profession with parents, teachers, education officers, tribunal panels and other decision makers who seek advice from EPs.

What are the drawbacks? As Sigston (1992) points out, problem-solving approaches and alliances tend to assume that all consultations are concerned with 'promoting the resolution of problems', as opposed to other agendas such as 'securing additional or alternative resources' or 'the EP aiming to be liked and a friend to the problem owner or school' or, and often related to the last, 'focusing upon the easiest, and/or least controversial aspect of a problem'. Problem analysis cannot directly address such agendas, but it can make them explicit. In this respect, we have found that the importance of the first two steps on the framework cannot be overemphasized: 'clarifying the request and checking out the need for an EP's involvement' (Step 1); and the 'negotiating and contracting role' (Step 2), are components which are conspicuously absent from most problem-solving approaches. In the course of some tough consultations, these steps may have to be retraced in order to clarify expectations and diverging agendas.

The value of the problem analysis approach in mapping on to the key elements of psychological advice required by the Education Act 1996 (DfEE, 1996) is an asset. 'Problem dimensions' can map on to 'special educational needs' and 'intervention plan with rationale' can map on to 'suggested methods

Table 2. Criteria for judging the quality of problem analysis

<i>Problem analysis step</i>	<i>Criteria</i>	<i>Definitions of criteria</i>	<i>Examples of use of criteria</i>
STEP 4 Identify the dimensions of the problem	1. Accuracy	Problem dimensions are accurately identified when they are consistent with the facts of the case. Inaccuracy may arise from over generalisation, or speculative inference.	<i>Inaccuracy arising from speculative inference</i> A psychologist infers without supporting data that because Michael has few friends 'being lonely' is one of his problems.
	2 Completeness	Completeness is present when all major problem dimensions are identified even though the way they are labelled and described may differ from the language used by others.	<i>Incompleteness arising from omission of a major dimension</i> A teacher comes to a psychologist for help in dealing with a disruptive child in her class. She is inexperienced and clearly states that <i>curriculum and classroom management</i> are 'very difficult and demanding areas' for her. The psychologist does not include these as dimensions of the problem situation.
	3 Clarify	Clarity is a quality of orderliness in which main ideas are both high-lighted and readily understood. Clarity can be achieved by the use of self-explanatory headings or phrases, or by the inclusion of examples. Unclearness can result from confused writing, from the inclusion of irrelevant detail or from generating a long repetitive list.	<i>Unclearness resulting from ambiguous headings</i> 'Motivation'. Does this mean that the child appears unmotivated in academic and social situations or that the teacher's style is unmotivating, or something else? It is unclear from the heading what actually is problematic.
STEP 5 Integration of problem dimensions	4. Soundness of argument for priorities	This criterion refers to the quality of arguments presented to support the psychologist's own priorities. Sound arguments are consistent with sound knowledge and practice and consistent with case evidence. Arguments can also be strengthened by explicitly identifying and replying to alternative priorities.	<i>Soundness arising from arguments about urgency</i> Michael's aggression is seen as being the most important aspect of the case for immediate intervention. This is because school personnel and peers may be harmed further by Michael and, from Michael's perspectives, school is becoming an environment <i>where he can not engage constructively with either school work or with peers and adults.</i>
STEP 6 Feedback and agree problem analysis and devise intervention	5. Soundness of argument for cause of priority	A sound argument is defined under (4).	<i>Unsoundness arising from inconsistency with and lack of support from case evidence</i> 'The teacher's difficulties with Michael are caused by her low commitment to teaching. Until she is sure she wants to continue teaching, the situation will not improve'. There is no evidence that the teacher's commitment to teaching was any greater in her first year when she was not experiencing difficulties. The above statement requires supporting evidence.
STEP 7 Agree action plan implementation	6. Specificity	Plans are specific when they refer to actual or conditional decisions about, for example, who will do what and when.	<i>Lack of specificity</i> 'I will help the teacher work on her classroom and curriculum management problems.'

Table 2. Continued

Problem analysis step	Criteria	Definitions of criteria	Examples of use of criteria
STEP 7 Agree action plan implementation	7. Appropriateness	Appropriateness is judged on the basis of case evidence and relevant theory and research. Next steps are inappropriate when there is very little evidence either in the literature or in the case itself, that they would be effective.	Inappropriateness due to consider casual relationships It does not make good clinical sense to ask Michael to go away and reflect upon his behaviour when there is considerable evidence that being unable to construe cause and effect relationships and monitor and control his emotions are important aspects of the problem situation.
	8. Completeness	To be complete, the next steps should address the priority dimension(s), and all other dimensions which are likely to affect the implementation and success of the plans.	Incompleteness The teacher is distressed by Michael's challenging behaviour. The psychologist has argued that the teacher and the class are being affected by Michael's 'outbursts' and that Michael's learning and emotional needs are not being met. The psychologist recommends that the teacher be firmer and set up a reward system. These steps are incomplete in that they do not address the immediate problem of Michael's challenging behaviour and classroom and curriculum management. The combination of these factors would make the effectiveness of a reward system considerably unlikely as they do not take into account the readiness level of the teacher.

and approaches, facilities and resources' (Monsen and Beaver, in press). However, while tribunal judgements have highlighted logical and coherent links between the difficulties identified and the provision proposed to meet them, it must be acknowledged that greater clarity in this respect may not be immediately welcomed in all local educational authorities or indeed in some educational psychology services as there may well be considerable costs.

One particular area for development is the potential offered by the problem analysis framework for describing the 'value added' by the involvement of an EP – a crucial, but as yet poorly developed aspect of service audit. At Steps 4 and 5 of the problem analysis, the EP is required to structure and frame the problem situation in a way which leads to increased understanding by the consultee and more constructive action on their behalf. An assessment which staff perceive as 'simply them telling us what we already knew', does not meet these criteria and cannot be seen to add value. Similarly, evaluation of Steps 6 and 7 can highlight the value added by the intervention plan devised in consultation with the EP, as opposed to that being implemented previously by the school.

We are, of course, very much aware that talk of evaluation is often greeted with hollow laughter in busy psychological services. Protests are often framed as: 'When we have insufficient time to do the work, how can we afford the time to evaluate it?' However,

without evaluation, EPs do not know what aspects of the work are actually worth doing and, in a consumer-led, value-for-money culture of the 1990s, how long can we afford to be in that position?

The problem analysis framework also offers potential for resolving a long-standing debate about the role of the EP. 'Being a consultant' and 'being an expert' are often presented as antithetical modes of psychological service delivery. The problem analysis framework makes explicit the points at which expertise, based on knowledge of psychological theory and research, needs to be contributed in order to achieve more effective outcomes for the child from the consultation process.

Areas for development have also been identified in relation to aspects of the problem analysis process, as is illustrated by this extract from a critique written by Lucy Robertson, an EP in training at UCL during 1995/96:

'Problem analysis derives from a traditional, mechanistic, scientific paradigm. It attempts to test hypotheses and then describe reality in objective empirical ways and use logic and rationality to affect change. However, the consultants actually impose their own subjective interpretation on the data. Although this may be based on logic, rationality and evidence, ultimately only one possible integration of the dimensions is selected. This means that there is always a danger that it

is the "wrong" integration, even if it is accepted by the consultee. It is this subjective interpretation which forms the basis for the selection of the appropriate intervention. It may therefore be regarded as particularly important to have clear guidelines for integrating the problem dimensions. Yet the problem analysis framework currently gives no guidance as to how to integrate the problem dimensions.'

As a consequence, we have been working at UCL on developing a more systematic approach to the integration of problem dimensions, using the causal modelling approach developed by Morton and Frith (1995), and this will be described in a future publication. However, the EPs in training who through 1995 and 1996 helped us to develop and improve ways of teaching this approach, also had a number of assets to highlight at the end of their professional training course the general comment was:

'Problem analysis is a staged and structured process for investigating problems in the real world. It is a structure within which the consultant can guide his or her work in order to enable problem owners to reconstruct their understanding and resultant attitudes and beliefs about the problematic situation. The problem analysis approach facilitates a collaborative partnership and allows for consultee and consultant to negotiate a series of hypotheses and renegotiate them in light of new evidence. It ensures a focus on specific interventions that have the potential to help and enables systematic evaluation.'

A final comment

When preparing this article, we were aware that the approach we were advocating could seem intricate, involved and intellectually challenging. However, these are also the characteristics of many of the everyday problems on which the advice of an EP is sought.

The task of getting psychology out of textbooks and research journals and into everyday life is full of pitfalls for the ill prepared. We believe that EPs in the new millennium will face increasing competition from other service providers who offer alternative approaches to helping families, schools, education authorities and other caring agencies to manage problems. We also believe that training EPs to use sophisticated psychological models, like the problem analysis framework, will enable

practitioners to demonstrate more ably the power of psychology as a force for positive change in society.

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